

### **AMENDMENTS TO THE SPECIFICATION**

On page 2, before "Field of the Invention," please insert the following: -- This is a continuation of application Serial No. 09/654,558, filed on September 1, 2000, which claims the benefit of U.S. provisional application No. 60/152,081, filed September 2, 1999, the entire disclosures of which are incorporated herein by reference. --

Add the following new heading and paragraphs on page 2 at line 28:

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

Fig. 1 illustrates a multi-tube reactor immersed in a fluidized bed of sand according to an exemplary embodiment of the present invention;

Fig. 2 illustrates schematically an arrangement of tubes in a multi-tube reactor according to an exemplary embodiment of the present invention;

Fig. 3 illustrates a unit for testing a reactor tube according to an exemplary embodiment of the present invention;

Fig. 4 illustrates a tubular membrane according to an exemplary embodiment of the present invention;

Fig. 5 is a graph comparing thermal evolution of N<sub>2</sub> permeability in oxidizing a composite membrane having either an oxidizing treatment or a reducing treatment;

Fig. 6 is a graph showing hydrocarbon and oxygen gas permeability;

Fig. 7 substantially illustrates gas permeability through a membrane according to an exemplary embodiment of the present invention;

Fig. 8 is a graph showing increased yield from increased CO<sub>2</sub> percentage in the feed;

Fig. 9 is a graph showing increased selectivity from an increased percentage of butane according to an exemplary embodiment of the present invention;

Fig. 10 is a graph showing oxygen conversion and yield based on percentage of butane according to an exemplary embodiment of the present invention; and

Fig. 11 is a graph illustrating selectivity in relation to CO<sub>2</sub> concentration according to an exemplary embodiment of the present invention.

Please substitute the following marked up paragraphs for the paragraphs now appearing in the currently filed specification:

Paragraph beginning on page 3 line 16:

The membrane may further be ~~catalytic~~ catalytically active when coated or impregnated with ~~catalytic~~ catalytically active material.

Paragraph beginning on page 4, line 1:

The reactor comprises a number of perforated reaction tubes with a fixed bed catalyst of conventional vanadium phosphate (VPO) oxidation catalyst arranged on tube side. Cooling tubes arranged within a fluidized bed shell surrounds each reaction tube. A vapor tube carrying steam can be provided.

Paragraph beginning on page 5, line 1:

A typical unit for testing a membrane tube is shown in Fig. 3 with a VPO catalyst located inside the membrane tube, plugged with quartz wool, and a stainless steel shell, where the membrane is fixed. Hydrocarbon feed, e.g., butane, is introduced at tube

side and oxygen at shell side. Inert gas is introduced with the hydrocarbon feed to the tube side or partly with the oxygen reactant. Graphite gaskets were used to seal the space between the membrane and the shell. Temperature readings are obtained by way of thermocouples received in a thermowell.

Paragraph beginning on page 10, line 15:

A metallic membrane can be made from ~~of sinter~~ sintered metal tubes available from, e.g., Krebsöge. Alternatively, the same effect can be obtained by perforating a metal tube. Preferably, the holes have a diameter between 1-50 $\mu$ m. Perforations may conveniently be obtained by laser drilling.